



US006064970A

**United States Patent** [19]

McMillan et al.

[11] **Patent Number:** **6,064,970**[45] **Date of Patent:** **\*May 16, 2000**

[54] **MOTOR VEHICLE MONITORING SYSTEM  
FOR DETERMINING A COST OF  
INSURANCE**

[75] Inventors: **Robert John McMillan**, Tampa, Fla.;  
**Alexander Dean Craig**, Moreland  
Hills, Ohio; **John Patrick Heinen**,  
Tampa, Fla.

[73] Assignee: **Progressive Casualty Insurance  
Company**, Mayfield Village, Ohio

[\*] Notice: This patent is subject to a terminal dis-  
claimer.

[21] Appl. No.: **09/135,034**

[22] Filed: **Aug. 17, 1998**

**Related U.S. Application Data**

[63] Continuation of application No. 08/592,958, Jan. 29, 1996,  
Pat. No. 5,797,134.

[51] **Int. Cl.<sup>7</sup>** ..... **G06F 17/60**

[52] **U.S. Cl.** ..... **705/4**; 340/439; 340/870.01;  
360/5; 702/1; 705/400

[58] **Field of Search** ..... 340/439, 870.01;  
360/5; 701/1.7; 702/1; 705/4, 400

[56] **References Cited**

**U.S. PATENT DOCUMENTS**

3,504,337	3/1970	Ekman	340/439
4,067,061	1/1978	Juhasz	360/5
4,234,926	11/1980	Wallace et al.	702/188
4,258,421	3/1981	Juhasz et al.	701/35
4,533,962	8/1985	Decker et al.	360/5
4,608,638	8/1986	Tsikos	364/424
4,638,295	1/1987	Middlebrook et al.	340/465
4,667,336	5/1987	Best	377/15
4,745,564	5/1988	Tennes et al.	702/141
4,763,745	8/1988	Eto et al.	180/143
4,807,179	2/1989	Clere et al.	360/5 X
4,829,434	5/1989	Karmel et al.	72/866 X
4,843,463	6/1989	Michetti	358/108

4,843,578	6/1989	Wade	364/565
4,853,720	8/1989	Onari et al.	364/431.07

(List continued on next page.)

**FOREIGN PATENT DOCUMENTS**

9002388 8/1989 WIPO .

**OTHER PUBLICATIONS**

"The Safest Cars of 91", Baig, Edward U.S. News & World  
Report v109, n22, p.71; Dec. 3, 1990.

"Vendor's Spice Up Services", Robert Deierlein, Beverage-  
World, v109, n1467, p.82; Jun. 1990.

Rosenberg, Martin; Alexander, Stephen A. , Rate Classifi-  
cation Reform in New Jersey. Best's Review (Prop/Casu-  
alty) vo. 92. No. 12, pp. 30-32, Apr. 1992.

Kaneko, Tetsuya; Jovanis, Paul P. Multiday driving patterns  
and motor carrier accident risk. A disaggregate analysis.  
Accident Analysis and Prevention, vol. 24, No. 5, pp.  
437-456, Jan. 1, 1992.

*Primary Examiner*—Edward R. Cosimano

*Attorney, Agent, or Firm*—Fay, Sharpe, Fagan Minnich &  
McKee, LLP

[57] **ABSTRACT**

A method and system of determining a cost of automobile insurance based upon monitoring, recording and communicating data representative of operator and vehicle driving characteristics. The cost is adjustable retrospectively and can be prospectively set by relating the driving characteristics to predetermined safety standards. The method comprises steps of monitoring a plurality of raw data elements representative of an operating state of the vehicle or an action of the operator. Selected ones of the raw data elements are recorded when the ones are determined to have an identified relationship to safety standards. The selected ones are consolidated for processing against an insurer profile and for identifying a surcharge or discount to be applied to a base cost of automobile insurance. A final cost is produced from the base costs and the surcharges or discounts.

**15 Claims, 6 Drawing Sheets**